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<120> RATIONALLY DESIGNED ANTIBODIES

<130> 1087-2 CIP III

<140> US 10/737,290  
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<150> US 10/452,590  
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<150> US 10/307,724  
<151> 2002-12-02

<150> US 10/006,593  
<151> 2001-12-05

<150> US 60/251,448  
<151> 2000-12-05

<150> US 60/288,889  
<151> 2001-05-04

<150> US 60/294,068  
<151> 2001-05-29

<160> 193

<170> PatentIn version 3.2

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Gly Gly

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ggccatggct ggttgggcag c                                21

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gtg

63

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Gly Gly

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Gly Gly

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1

5

10

15

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Val Gly

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Pro Val

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Pro Asp

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Pro Ile

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Pro Asp

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Arg Leu Glu Glu Lys Val Lys Thr Leu Lys Ala Gln Asn Ser Glu Leu  
20 25 30

Ala Ser Thr Ala Asn Met Leu Arg Glu Gln Val Ala Gln Leu Lys Gln  
35 40 45

Lys Val Met Asn His Gly Gly Cys Ala Ser Gly Gln Ala Gly Gln His  
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Ser

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acggtcaccg tctccgcagc ctccaccaag ggcccatcggttcccccttcc 420  
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aaggtggaac tcaaacaac tgtggctgca ccatctgtct tcataccc gccatctgat 360  
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gaggccaaag tacagtggaa ggtggataac gccctccaat cgggtaactc ccaggagagt 480  
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Leu Ala Ala Arg Ala Xaa Xaa Trp Gly Gln Gly Thr  
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gcgnnynt ggggccaagg gacc                                         84

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 <211> 18  
 <212> PRT  
 <213> artificial sequence  
  
 <220>  
 <223> TPO mimetic with flanking amino acids  
  
 <400> 61

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Arg Gly

<210> 62  
 <211> 41  
 <212> DNA  
 <213> artificial sequence

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<220>
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<210> 63
<211> 24
<212> DNA
<213> artificial sequence

<220>
<223> primer

<400> 63
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<210> 64
<211> 24
<212> DNA
<213> artificial sequence

<220>
<223> primer

<400> 64
ccacgggcac agcctacatg gagc 24

<210> 65
<211> 54
<212> DNA
<213> artificial sequence

<220>
<223> nucleic acid encoding TPO mimetic peptide flanking sequence

<400> 65
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<210> 66
<211> 18
<212> PRT
<213> artificial sequence

<220>
<223> TPO mimetic peptide with flanking sequence

<400> 66

Leu Pro Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala Ala Arg Ala
1 5 10 15

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Pro Val

<210> 67  
<211> 472  
<212> PRT  
<213> artificial sequence

<220>  
<223> Humanized antibody heavy chain

<400> 67

Met Lys Trp Ser Trp Val Ile Leu Phe Leu Leu Ser Val Thr Ala Gly  
1 5 10 15

Val His Ser Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys  
20 25 30

Pro Gly Ala Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ile Phe  
35 40 45

Ser Asn Tyr Trp Ile Gln Trp Val Arg Gln Ala Pro Gly Gln Gly Leu  
50 55 60

Glu Trp Met Gly Glu Ile Leu Pro Gly Ser Gly Ser Thr Glu Tyr Thr  
65 70 75 80

Glu Asn Phe Lys Asp Arg Val Thr Met Thr Arg Asp Thr Ser Thr Ser  
85 90 95

Thr Val Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val  
100 105 110

Tyr Tyr Cys Ala Arg Leu Pro Ile Glu Gly Pro Thr Leu Arg Gln Trp  
115 120 125

Leu Ala Ala Arg Ala Pro Val Trp Gly Gln Gly Thr Leu Val Thr Val  
130 135 140

Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys  
145 150 155 160

Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys  
165 170 175

Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu  
180 185 190

Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu  
195 200 205

Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser Asn Phe Gly Thr  
210 215 220

Gln Thr Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val  
225 230 235 240

Asp Lys Thr Val Glu Arg Lys Cys Cys Val Glu Cys Pro Pro Cys Pro  
245 250 255

Ala Pro Pro Val Ala Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro  
260 265 270

Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val  
275 280 285

Val Asp Val Ser Gln Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val  
290 295 300

Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln  
305 310 315 320

Phe Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln  
325 330 335

Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly  
340 345 350

Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro  
355 360 365

Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu Met Thr  
370 375 380

Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser  
385 390 395 400

Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr  
405 410 415

Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr  
420 425 430

Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn Val Phe  
435 440 445

Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys  
450 455 460

Ser Leu Ser Leu Ser Leu Gly Lys  
465 470

<210> 68  
<211> 1419  
<212> DNA  
<213> artificial sequence

<220>

<223> nucleic acid encoding humanized antibody heavy chain

<400> 68  
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tgtaaagcta gcggctataat ttttctaattattgatttc aatgggtgcg tcagcccc 120  
gggcaggggcc tggaatggat gggtagatc ttaccggct ctggtagcac cgaatatacc  
aaaaatttta aagaccgtgt tactatgacg cgtgacactt cgactagtagtac agtatacatg 180  
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840

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tacacacaga aggcctctc cctgtctctg gtaaatga 1419

<210> 69  
<211> 236  
<212> PRT  
<213> artificial sequence

<220>  
<223> Humanized antibody light chain

<400> 69

Met Asp Met Arg Val Pro Ala Gln Leu Leu Gly Leu Leu Leu Leu Trp  
1 5 10 15

Leu Arg Gly Ala Arg Cys Asp Ile Gln Met Thr Gln Ser Pro Ser Ser  
20 25 30

Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Gly Ala Ser  
35 40 45

Glu Asn Ile Tyr Gly Ala Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys  
50 55 60

Ala Pro Lys Leu Leu Ile Tyr Gly Ala Thr Asn Leu Ala Asp Gly Val  
65 70 75 80

Pro Ser Arg Phe Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr  
85 90 95

Ile Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Asn

100 105 110

Val Leu Asn Thr Pro Leu Thr Phe Gly Gln Gly Thr Lys Val Glu Ile  
115 120 125

Lys Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp  
130 135 140

Glu Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn  
145 150 155 160

Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu  
165 170 175

Gln Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp  
180 185 190

Ser Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr  
195 200 205

Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser  
210 215 220

Ser Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys  
225 230 235

<210> 70  
<211> 711  
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<220>  
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gtcaccatca cctgcggcgc cagcgaaaac atctatggcg cgctgaactg gtatcaacag 180  
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ccttctcgct tctctggatc cggtccggaa acggatttca ctctgaccat cagcagtctg 300  
cagcctgaag acttcgctac gtattactgt cagaacgttt taaatactcc gttgactttc 360  
ggacagggtta ccaagggtgga aataaaaacga actgtggctg caccatctgt cttcatcttc 420

ccgccccatctg atgaggcagtt gaaatctgga actgcctctg ttgtgtgcct gctgaataac 480  
ttcttatccca gagaggccaa agtacagtgg aaggtggata acgcccctcca atcgggtaac 540  
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ctgacgctga gcaaagcaga ctacgagaaa cacaaagtct acgcctgcga agtcacccat 660  
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<210> 71  
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<212> PRT  
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<222> (1)..(2)  
<223> Xaa is any amino acid

<220>  
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<222> (6)..(6)  
<223> Xaa is any amino acid

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<222> (15)..(15)  
<223> Xaa is any amino acid

<220>  
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<222> (21)..(22)  
<223> Xaa is any amino acid

<400> 71

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Pro Leu Gly Gly Xaa Xaa  
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<210> 72  
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<212> DNA  
<213> artificial sequence

<220>

<223> primer		
<400> 72		21
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<210> 73		
<211> 39		
<212> DNA		
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<223> primer		
<400> 73		39
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<210> 74		
<211> 39		
<212> DNA		
<213> artificial sequence		
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<223> primer		
<400> 74		39
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<210> 75		
<211> 39		
<212> DNA		
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<211> 39		
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<400> 76		39
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<212> DNA  
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<220>  
<223> primer

<400> 82  
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<210> 83  
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<220>  
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<400> 83  
cacgcgcaca acacgtctag agaaaacgaca ctcacgcag 39

<210> 84  
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<400> 84  
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<210> 85  
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<220>  
<223> primer

<400> 85  
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<210> 86  
<211> 22  
<212> DNA  
<213> artificial sequence

<220>  
<223> primer

<400> 86

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22

<210> 87  
<211> 20  
<212> DNA  
<213> artificial sequence

<220>  
<223> primer

<400> 87  
aattaaccct cactaaaggg

20

<210> 88  
<211> 59  
<212> DNA  
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<220>  
<223> primer

<400> 88  
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59

<210> 89  
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<212> DNA  
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<220>  
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<400> 89  
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59

<210> 90  
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<212> DNA  
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59

<210> 91  
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<212> DNA  
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<220>

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<223> primer

<400> 91
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<210> 92
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<220>
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<400> 112

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<210> 113  
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<222> (2)..(2)  
<223> Xaa is any amino acid

<220>  
<221> MISC\_FEATURE  
<222> (11)..(11)  
<223> Xaa is any amino acid

<400> 113

Gly Xaa Gly Pro Thr Leu Arg Gln Trp Leu Xaa Tyr Ala Gln Lys Phe  
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Gln Gly

<210> 114

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<211> 48
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<222> (26)..(27)
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<210> 115
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<222> (25)..(26)
<223> n is a, c, g or t

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<220>
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ggaaaagctc ctaagctcct gatctataac ccgatcgaag gcccaaccct gcgccagtgg 120
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gatttcactc tcaccatcag cagcctgcag cctgaagatt ttgcaactta ttactgccaa 180
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300
354

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<210> 117  
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<400> 117

Glu Val Gln Leu Leu Glu Gln Ser Gly Ala Glu Val Lys Lys Pro Gly  
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Ser Ser Val Lys Val Ser Cys Arg Ala Ser Gly Gly Thr Phe Asn Asn  
20 25 30

Tyr Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp  
35 40 45

Met Gly Gly Ile Phe Pro Phe Arg Asn Thr Ala Lys Tyr Ala Gln His  
50 55 60

Phe Gln Gly Arg Val Thr Ile Thr Ala Asp Glu Ser Thr Gly Thr Ala  
65 70 75 80

Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Ile Tyr Tyr  
85 90 95

Cys Ala Arg Gly Asp Thr Ile Phe Gly Val Thr Met Gly Tyr Tyr Ala  
100 105 110

Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ala Ala Ser  
115 120 125

Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr  
130 135 140

Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro  
145 150 155 160

Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val  
165 170 175

His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser  
180 185 190

Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile  
195 200 205

Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys Lys Val  
210 215 220

Glu Pro Lys Ser Cys Asp Lys Thr Ser  
225 230

<210> 118  
<211> 212  
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<213> human

<400> 118

Glu Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Pro Gly Glu Arg  
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Ala Thr Leu Ser Cys Arg Ala Ser His Ser Val Ser Arg Ala Tyr Leu  
20 25 30

Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile Tyr  
35 40 45

Gly Thr Ser Ser Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser Gly Ser  
50 55 60

Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu Pro Glu  
65 70 75 80

Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Gly Ser Pro Trp Phe  
85 90 95

Gly Gln Gly Thr Lys Val Glu Leu Lys Arg Thr Val Ala Ala Pro Ser  
100 105 110

Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly Thr Ala  
115 120 125

Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val  
130 135 140

Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu Ser  
145 150 155 160

Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser Ser Thr  
165 170 175

Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys  
180 185 190

Glu Val Thr His Gln Gly Leu Ser Leu Pro Val Thr Lys Ser Phe Asn  
195 200 205

Arg Gly Glu Cys  
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<223> Xaa can be any naturally occurring amino acid

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<222> (20)..(21)  
<223> Xaa can be any naturally occurring amino acid

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Gly Ile Phe Xaa Xaa Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala  
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Ala Arg Ala Xaa Xaa Gly  
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<222> (35)..(36)

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<223> n is a, c, g or t

<220>
<221> misc_feature
<222> (38)..(39)
<223> n is a, c, g or t

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<210> 121
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<212> DNA
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<220>
<223> primer

<220>
<221> misc_feature
<222> (34)..(35)
<223> n is a, c, g or t

<220>
<221> misc_feature
<222> (37)..(38)
<223> n is a, c, g or t

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<220>
<223> antibody light chain

<400> 122

Glu Ile Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Pro Gly
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Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Ser
20          25            30

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu
35          40            45

Ile Tyr Gly Ala Ser Ser Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser

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50

55

60

Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu  
65 70 75 80

Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Ser Ser Pro  
85 90 95

Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala  
100 105 110

Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser  
115 120 125

Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu  
130 135 140

Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser  
145 150 155 160

Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu  
165 170 175

Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val  
180 185 190

Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Leu Pro Val Thr Lys  
195 200 205

Ser Phe Asn Arg Gly Glu Cys  
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<212> PRT

<213> artificial sequence

<220>

<223> antibody light chain variable region

<400> 123

Glu Ile Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Pro Gly  
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Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Ser  
20 25 30

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu  
35 40 45

Ile Tyr Gly Ala Ser Ser Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser  
50 55 60

Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu  
65 70 75 80

Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Ser Ser Pro  
85 90 95

Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys  
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<210> 124

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<213> artificial sequence

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<223> antibody heavy chain

<400> 124

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser  
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Ser Ser Tyr  
20 25 30

Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met  
35 40 45

Gly Gln Leu Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala Ala Arg  
50 55 60

Ala Asn Ser Arg Val Thr Ile Thr Ala Asp Glu Ser Thr Ser Thr Ala  
65 70 75 80

Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr  
85 90 95

Cys Ala Arg Leu Pro Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala  
100 105 110

Ala Arg Ala Pro Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser  
115 120 125

Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser Ser Lys  
130 135 140

Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr  
145 150 155 160

Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser  
165 170 175

Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser  
180 185 190

Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr Gln Thr  
195 200 205

Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val Asp Lys  
210 215 220

Lys Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro Pro Cys  
225 230 235 240

Pro Ala Pro Glu Leu Leu Gly Gly Pro  
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<210> 125

<211> 128

<212> PRT

<213> artificial sequence

<220>

<223> antibody heavy chain variable region

<400> 125

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser  
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Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Ser Ser Tyr  
20 25 30

Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met  
35 40 45

Gly Gln Leu Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala Ala Arg  
50 55 60

Ala Asn Ser Arg Val Thr Ile Thr Ala Asp Glu Ser Thr Ser Thr Ala  
65 70 75 80

Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr  
85 90 95

Cys Ala Arg Leu Pro Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala  
100 105 110

Ala Arg Ala Pro Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser  
115 120 125

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<220>  
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<223> Xaa can be any naturally occurring amino acid

<220>  
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<400> 126

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Gly Ile Phe Ser Pro Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala  
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<400> 128

Gly Ile Phe Pro Gln Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala  
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Ala Arg Ala Lys His Gly  
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<210> 129  
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<400> 129

Gly Ile Phe Pro Asn Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala  
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Ala Arg Ala Thr Gly Gly  
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<400> 130

Gly Ile Phe Lys Gly Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala  
1 5 10 15

Ala Arg Ala Pro Gly Gly  
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<210> 131  
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<400> 131

Gly Ile Phe Pro Pro Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala  
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Ala Arg Ala Ala Val Gly  
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Gly Ile Phe Pro Arg Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala  
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Ala Arg Ala Lys Leu Gly  
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<210> 134

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<400> 134

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Ala Arg Ala Lys Arg Gly  
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<210> 135

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<211> 44

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<400> 142

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20

25

30

Gly Thr Leu Ser Leu Ser Pro Gly Glu Arg Ala Thr Leu Ser Cys Arg  
35 40 45

Ala Ser Gln Ser Val Ser Ser Tyr Leu Ala Trp Tyr Gln Gln Lys  
50 55 60

Pro Gly Gln Ala Pro Arg Leu Leu Ile Tyr Gly Ala Ser Ser Arg Ala  
65 70 75 80

Thr Gly Ile Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe  
85 90 95

Thr Leu Thr Ile Ser Arg Leu Glu Pro Glu Asp Phe Ala Val Tyr Tyr  
100 105 110

Cys Gln Gln Tyr Gly Ser Ser Pro Trp Thr Phe Gly Gln Gly Thr Lys  
115 120 125

Val Glu Ile Lys Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro  
130 135 140

Pro Ser Asp Glu Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu  
145 150 155 160

Leu Asn Asn Phe Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp  
165 170 175

Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp  
180 185 190

Ser Lys Asp Ser Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys  
195 200 205

Ala Asp Tyr Glu Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln  
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Gly Leu Ser Leu Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys  
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<210> 143

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<212> PRT  
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<220>  
<223> recombinant Ab heavy chain

<400> 143

Met Lys Tyr Leu Leu Pro Thr Ala Ala Ala Gly Leu Leu Leu Leu Ala  
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Ala Gln Pro Ala Met Ala Leu Glu Gln Val Gln Leu Val Gln Ser Gly  
20 25 30

Ala Glu Val Lys Lys Pro Gly Ser Ser Val Lys Val Ser Cys Lys Ala  
35 40 45

Ser Gly Gly Thr Phe Ser Ser Tyr Ala Ile Ser Trp Val Arg Gln Ala  
50 55 60

Pro Gly Gln Gly Leu Glu Trp Met Gly Gln Leu Ile Glu Gly Pro Thr  
65 70 75 80

Leu Arg Gln Trp Leu Ala Ala Arg Ala Asn Ser Arg Val Thr Ile Thr  
85 90 95

Ala Asp Glu Ser Thr Ser Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg  
100 105 110

Ser Glu Asp Thr Ala Val Tyr Tyr Cys Ala Arg Leu Pro Ile Glu Gly  
115 120 125

Pro Thr Leu Arg Gln Trp Leu Ala Ala Arg Ala Pro Val Trp Gly Gln  
130 135 140

Gly Thr Thr Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val  
145 150 155 160

Phe Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala  
165 170 175

Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser  
180 185 190

Trp Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val

195

200

205

Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro  
210 215 220

Ser Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys  
225 230 235 240

Pro Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp  
245 250 255

Lys Thr Ser Gly Gln Ala Gly Gln His His His His His His Gly Ala  
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Tyr Pro Tyr Asp Val Pro Asp Tyr Ala Ser  
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<210> 144

<211> 24

<212> DNA

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<400> 144

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<210> 145

<211> 42

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<222> (13)..(14)

<223> n is a, c, g or t

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<223> n is a, c, g or t

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Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Ser Ser Tyr  
20 25 30

Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met  
35 40 45

Gly Gln Leu Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala Ala Arg  
50 55 60

Ala Asn Ser Arg Val Thr Ile Thr Ala Asp Glu Ser Thr Ser Thr Ala  
65 70 75 80

Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr  
85 90 95

Cys Ala Arg Leu Pro Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala  
100 105 110

Ala Arg Ala Pro Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser  
115 120 125

<210> 148  
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<212> PRT  
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<220>  
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<400> 148

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser  
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Asn Asn Tyr  
20 25 30

Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met  
35 40 45

Gly Gln Leu Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala Ala Arg  
50 55 60

Ala Asn Ser Arg Val Thr Ile Thr Ala Asp Glu Ser Thr Ser Thr Ala  
65 70 75 80

Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr  
85 90 95

Cys Ala Arg Leu Pro Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala  
100 105 110

Ala Arg Ala Pro Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser  
115 120 125

<210> 149  
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<220>  
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<400> 149

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser  
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Gly Glu Tyr  
20 25 30

Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met  
35 40 45

Gly Gln Leu Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala Ala Arg  
50 55 60

Ala Asn Ser Arg Val Thr Ile Thr Ala Asp Glu Ser Thr Ser Thr Ala  
65 70 75 80

Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr  
85 90 95

Cys Ala Arg Leu Pro Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala  
100 105 110

Ala Arg Ala Pro Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser  
115 120 125

<210> 150  
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<220>  
<223> cloned antibody VH

<400> 150

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser  
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Gln Asp Tyr  
20 25 30

Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met  
35 40 45

Gly Gln Leu Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala Ala Arg  
50 55 60

Ala Asn Ser Arg Val Thr Ile Thr Ala Asp Glu Ser Thr Ser Thr Ala  
65 70 75 80

Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr  
85 90 95

Cys Ala Arg Leu Pro Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala  
100 105 110

Ala Arg Ala Pro Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser  
115 120 125

<210> 151  
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<220>  
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<400> 151

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser  
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Pro Arg Tyr  
20 25 30

Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met  
35 40 45

Gly Gln Leu Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala Ala Arg  
50 55 60

Ala Asn Ser Arg Val Thr Ile Thr Ala Asp Glu Ser Thr Ser Thr Ala  
65 70 75 80

Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr  
85 90 95

Cys Ala Arg Leu Pro Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala  
100 105 110

Ala Arg Ala Pro Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser  
115 120 125

<210> 152  
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<220>  
<223> flanked TPO mimetic

<400> 152

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Asn Ser

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<400> 153

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<400> 154

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Thr Val Ser Ser  
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<210> 155  
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<212> DNA  
<213> human

<400> 155  
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gtcagagctc tggagaagag ctgctcagtt aggaccaga gggaaacctg gaaaccccag 120  
cgcagcttct cttcctcctg ctactctggc tcccaggta gggaaacatg ggtatggttt 180  
gcatgtcagt gaaaaccctc tcaagtccctg ttacctggca actctgctca gtcaatacaa 240  
taattaaagc tcaatataaa gcaataattc tggctttct gggaaagacaa tgggttgat 300  
tttagattaca tgggtgactt ttctgtttta tttccaatct cagataaccac cggagaaatt 360  
gtgttgcgc agtctccagg caccctgtct ttgtctccag gggaaagagc caccctctcc 420  
tgcagggcca gtcagagtgt tagcagcagc tacttagcct ggtaccagca gaaacctggc 480  
caggctccca ggctcctcat ctatggtgca tccagcaggg ccactggcat cccagacagg 540  
ttcagtggca gtgggtctgg gacagacttc actctcacca tcagcagact ggaggctgaa 600  
gattttgcag tgtattactg tcagcagttt ggtagctcac ctccccacagt gattcagtt 660  
gaaacaaaaaa cctctgcaag accttcattt tttacttagat tataccagct g 711

<210> 156  
<211> 12  
<212> PRT  
<213> human

<400> 156

Trp Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys  
1 5 10

<210> 157  
<211> 447  
<212> DNA  
<213> artificial sequence

<220>  
<223> recombinant DNA encoding AB VH

<400> 157  
atgaaatacc tattgcctac ggcagccgct ggattgttat tactcgctgc ccaaccagcc 60  
atggcgcagg tgcatgttgt gcagagcggc gcggaagtga aaaaaggcag cagcgtaaaa 120  
gtgagctgca aagcgagcgg cggcaccttt agcagctatg cgatttagctg ggtgcgcag 180  
gcgcggggcc agggccttgg aatggatgggc cagctgattt aaggccccgac cctgcgcag 240  
tggctggcg cgcgcgcgaa cagccgcgtg accattacccg cggatgaaag caccagcacc 300  
gcgtatatgg aactgagcag cctgcgcagc gaagataccg cggatgttatta ttgcgcgcgc 360  
ctgccgattt aaggccccgac cctgcgcagc tggctggcg cgcgcgcgccc ggtgtggggc 420  
caqqqccacca ccgtqaccgt gagcagc 447

<210> 158

<211> 150

<212> PRT

<213> artificial sequence

<220>

<223> recombinant Ab VH

<400> 158

Ala Gln Pro Ala Met Ala Gln Val Gln Leu Val Gln Ser Gly Ala Glu  
20 25 30

Val Lys Lys Pro Gly Ser Ser Val Lys Val Ser Cys Lys Ala Ser Gly  
35 40 45

Gly Thr Phe Ser Ser Tyr Ala Ile Ser Trp Val Arg Gln Ala Pro Gly  
50 55 60

Gln Gly Leu Glu Trp Met Gly Gln Leu Ile Glu Gly Pro Thr Leu Arg  
65 70 75 80

Gln Trp Leu Ala Ala Arg Ala Asn Ser Arg Val Thr Ile Thr Ala Asp  
85 90 95

Glu Ser Thr Ser Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu  
           100             105                 110

Asp Thr Ala Val Tyr Tyr Cys Ala Arg Leu Pro Ile Glu Gly Pro Thr  
115 120 125

Leu Arg Gln Trp Leu Ala Ala Arg Ala Pro Val Trp Gly Gln Gly Thr  
130 135 140

Thr Val Thr Val Ser Ser  
145 150

<210> 159  
<211> 127  
<212> PRT  
<213> artificial sequence

<220>  
<223> recombinant Ab VH

<400> 159

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser  
1 5 10 15

Ser Val Lys Val Ser Cys Arg Ala Ser Gly Gly Thr Phe Asn Asn Tyr  
20 25 30

Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met  
35 40 45

Gly Gly Ile Phe Pro Phe Arg Asn Thr Ala Lys Tyr Ala Gln His Phe  
50 55 60

Gln Gly Arg Val Thr Ile Thr Ala Asp Glu Ser Thr Gly Thr Ala Tyr  
65 70 75 80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Ile Tyr Tyr Cys  
85 90 95

Ala Arg Leu Pro Ile Glu Gly Pro Thr Leu Arg Gln Trp Leu Ala Ala  
100 105 110

Arg Ala Pro Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ala  
115 120 125

<210> 160  
<211> 390  
<212> DNA

<213> artificial sequence

<220>

<223> recombinant DNA encoding Ab Vk

<400> 160

atgaaatacc tattgcctac ggcagccgct ggattgttat tactcgctgc ccaaccagcc	60
atggcggaaa ttgtgctgac ccagagccc ggcacctga gcctgagccc gggcgaacgc	120
gcgacctga gctgccgcgc gagccagagc gtgagcagca gctatctggc gtggatcag	180
cagaaaccgg gccaggcgcc ggcctgctg atttatggcg cgagcagccg cgccgaccggc	240
attccggatc gcttagcgg cagcggcagc ggcaccgatt ttaccctgac cattagccgc	300
ctgaaaccgg aagattttgc ggtgtattat tgccagcagt atggcagcag cccgtggacc	360
tttggccagg gcaccaaagt ggaaattaaa	390

<210> 161

<211> 130

<212> PRT

<213> artificial sequence

<220>

<223> recombinant Ab Vk

<400> 161

Met Lys Tyr Leu Leu Pro Thr Ala Ala Ala Gly Leu Leu Leu Leu Ala			
1	5	10	15

Ala Gln Pro Ala Met Ala Glu Ile Val Leu Thr Gln Ser Pro Gly Thr		
20	25	30

Leu Ser Leu Ser Pro Gly Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser		
35	40	45

Gln Ser Val Ser Ser Ser Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly		
50	55	60

Gln Ala Pro Arg Leu Leu Ile Tyr Gly Ala Ser Ser Arg Ala Thr Gly			
65	70	75	80

Ile Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu		
85	90	95

Thr Ile Ser Arg Leu Glu Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln		
100	105	110

Gln Tyr Gly Ser Ser Pro Trp Thr Phe Gly Gln Gly Thr Lys Val Glu  
115                    120                    125

Ile Lys  
130

<210> 162  
<211> 107  
<212> PRT  
<213> artificial sequence

<220>  
<223> recombinant Ab Vκ

<400> 162

Glu Ile Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Pro Gly  
1                    5                    10                    15

Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser His Ser Val Ser Arg Ala  
20                    25                    30

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu  
35                    40                    45

Ile Tyr Gly Thr Ser Ser Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser  
50                    55                    60

Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu  
65                    70                    75                    80

Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Gly Ser Pro  
85                    90                    95

Trp Phe Gly Gln Gly Thr Lys Val Glu Leu Lys  
100                    105

<210> 163  
<211> 272  
<212> DNA  
<213> artificial sequence

<220>  
<223> primer

<400> 163

ccagccatgg	cgcagggtgca	gctgggtcag	agcggcgccgg	aagtaaaaaa	accgggcagc	60
agcgtgaaag	ttagctgcaa	agcgagcggc	ggcacctta	gcagctatgc	gattagctgg	120
gtgcgccagg	cgcgggccca	gggcctggaa	tggatggcg	gcattattcc	gattttggc	180
accgcgaact	atgcgcagaa	atttcagggc	cgcgtgacca	ttaccgcgga	tgaaagcacc	240
agcaccgcgt	atatgaaact	gagcagcctg	cg			272
<210>	164					
<211>	271					
<212>	DNA					
<213>	artificial sequence					
<220>						
<223>	primer					
<400>	164					
gttccagctc	acggtcaccg	gttccggaaa	ataatttc	accaggcagc	ccagcgccgc	60
ggtgccgccc	ctggtgcttt	tgctgctcgg	cgcgcggaa	aacacgctcg	ggccttttgt	120
gctcgcgctg	ctcacggta	cgggtggc	ctggccccac	accggcgccgc	gcccggccag	180
ccactggcgc	agggtcgccc	cttcaatcgg	caggcgcgcg	caataataca	ccgcggtatac	240
ttcgctgcgc	aggctgctca	gttccatata	c			271
<210>	165					
<211>	274					
<212>	DNA					
<213>	artificial sequence					
<220>						
<223>	primer					
<400>	165					
cgagtctaga	ttacggcccg	cccagcgtt	ccggcgccgg	gcacggcgaa	caggtatggg	60
tttatcgca	gttttcggt	tccacttttt	tatccacttt	ggtgttgctc	ggttatgg	120
tcacgttgca	aatataggta	tgggtgccc	ggctgctgt	cggcacggtc	accacgctgc	180
tcaggctata	caggccgt	ctctgcagca	ccgccccaaa	gttatgcacg	ccgctggta	240
gcgcgccc	gttccagctc	acggtcaccg	gttc			274
<210>	166					
<211>	236					
<212>	DNA					
<213>	artificial sequence					
<220>						

<223> primer

<400> 166  
 ccagccatgg cgaaattgt gctgacccag agccggca ccctgagcct gagccggc 60  
 gaacgcgca ccctgagctg ccgcgcgagc cagagcgtga gcagcagcta tctggcg 120  
 tatacggcaga aaccggcca ggcccgcgc ctgctgattt atggcgcgag cagccgcg 180  
 accggcattc cgatcgctt tagcggcagc ggcagcggca ccgattttac cctgac 236

<210> 167  
 <211> 238  
 <212> DNA  
 <213> artificial sequence

<220>  
 <223> primer

<400> 167  
 cttcgcgttc gcgcggataa aagttgttca gcaggcacac cacgctcg 60  
 tcagtgttca tcgctcg 120  
 ttccacttttgcgttca gaaaaataaa cacgctcg 180  
 caccgcaaaa tttccgg 238

<210> 168  
 <211> 245  
 <212> DNA  
 <213> artificial sequence

<220>  
 <223> primer

<400> 168  
 gtgctgatca ttagcattcg ccgcggtaa agcttttgtt caccggcagg 60  
 gatgggtcac ttgcac 120  
 gggtgctgct caggctatag gtgctatctt tgctatcctg ttccgtcac 180  
 tggccgct ctgcagcgc 240  
 agttg 245

<210> 169  
 <211> 98  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> recombinant Ab VH

<400> 169

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser  
1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Ser Ser Tyr  
20 25 30

Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met  
35 40 45

Gly Gly Ile Ile Pro Ile Phe Gly Thr Ala Asn Tyr Ala Gln Lys Phe  
50 55 60

Gln Gly Arg Val Thr Ile Thr Ala Asp Glu Ser Thr Ser Thr Ala Tyr  
65 70 75 80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys  
85 90 95

Ala Arg

<210> 170

<211> 96

<212> PRT

<213> human

<400> 170

Glu Ile Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Pro Gly  
1 5 10 15

Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Ser  
20 25 30

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu  
35 40 45

Ile Tyr Gly Ala Ser Ser Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser  
50 55 60

Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu  
65 70 75 80

Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Ser Ser Pro  
85 90 95

<210> 171  
<211> 177  
<212> PRT  
<213> artificial sequence

<220>  
<223> recombinant Ab heavy chain

<400> 171

Glu Gly Gly Gly Ser Glu Gly Gly Ser Glu Gly Gly Ser Glu  
1 5 10 15

Gly Gly Gly Ser Gly Gly Ser Gly Ser Gly Asp Phe Asp Tyr Glu  
20 25 30

Lys Met Ala Asn Ala Asn Lys Gly Ala Met Thr Glu Asn Ala Asp Glu  
35 40 45

Asn Ala Leu Gln Ser Asp Ala Lys Gly Lys Leu Asp Ser Val Ala Thr  
50 55 60

Asp Tyr Gly Ala Ala Ile Asp Gly Phe Ile Gly Asp Val Ser Gly Leu  
65 70 75 80

Ala Asn Gly Asn Gly Ala Thr Gly Asp Phe Ala Gly Ser Asn Ser Gln  
85 90 95

Met Ala Gln Val Gly Asp Gly Asp Asn Ser Pro Leu Met Asn Asn Phe  
100 105 110

Arg Gln Tyr Leu Pro Ser Leu Pro Gln Ser Val Glu Cys Arg Pro Phe  
115 120 125

Val Phe Ser Ala Gly Lys Pro Tyr Glu Phe Ser Ile Asp Cys Asp Lys  
130 135 140

Ile Asn Leu Phe Arg Gly Val Phe Ala Phe Leu Leu Tyr Val Ala Thr  
145 150 155 160

Phe Met Tyr Val Phe Ser Thr Phe Ala Asn Ile Leu Arg Asn Lys Glu  
165 170 175

Ser

<210> 172  
<211> 17  
<212> PRT  
<213> human

<400> 172

Cys Phe Gly Arg Lys Met Asp Arg Ile Ser Ser Ser Ser Gly Leu Gly  
1 5 10 15

Cys

<210> 173  
<211> 39  
<212> PRT  
<213> human

<400> 173

His Gly Glu Gly Arg Phe Thr Ser Asp Leu Ser Lys Gln Met Glu Glu  
1 5 10 15

Glu Ala Val Arg Leu Phe Ile Glu Trp Leu Lys Asn Gly Gly Pro Ser  
20 25 30

Ser Gly Ala Pro Pro Pro Ser  
35

<210> 174  
<211> 30  
<212> PRT  
<213> human

<400> 174

His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly  
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg  
20 25 30

<210> 175  
<211> 34

<212> PRT  
<213> human

<400> 175

His Ala Asp Gly Ser Phe Ser Asp Glu Met Asn Thr Ile Leu Asp Asn  
1 5 10 15

Leu Ala Ala Arg Asp Phe Ile Asn Trp Leu Ile Gln Thr Lys Ile Thr  
20 25 30

Asp Arg

<210> 176  
<211> 29  
<212> PRT  
<213> human

<400> 176

His Ser Gln Gly Thr Phe Thr Ser Asp Tyr Ser Lys Tyr Leu Asp Ser  
1 5 10 15

Arg Arg Ala Gln Asp Arg Val Gln Trp Leu Met Asn Thr  
20 25

<210> 177  
<211> 38  
<212> PRT  
<213> human

<400> 177

His Ser Asp Gly Ile Phe Thr Asp Ser Tyr Ser Arg Tyr Arg Lys Gln  
1 5 10 15

Met Ala Val Lys Lys Tyr Leu Ala Ala Val Leu Gly Lys Arg Tyr Lys  
20 25 30

Gln Arg Val Lys Asn Lys  
35

<210> 178  
<211> 130  
<212> PRT  
<213> human

<400> 178

Phe Ser Val Gly Leu Glu Thr Tyr Val Thr Ile Pro Asn Met Pro Ile  
1 5 10 15

Arg Phe Thr Lys Ile Phe Tyr Asn Gln Gln Asn His Tyr Asp Gly Ser  
20 25 30

Thr Gly Lys Phe His Cys Asn Ile Pro Gly Leu Tyr Tyr Phe Ala Tyr  
35 40 45

His Ile Thr Val Tyr Met Lys Asp Val Lys Val Ser Leu Phe Lys Lys  
50 55 60

Asp Lys Ala Met Leu Phe Thr Tyr Asp Gln Tyr Gln Glu Asn Asn Val  
65 70 75 80

Asp Gln Ala Ser Gly Ser Val Leu Leu His Leu Glu Val Gly Asp Gln  
85 90 95

Val Trp Leu Gln Val Tyr Gly Glu Gly Glu Arg Asn Gly Leu Tyr Ala  
100 105 110

Asp Asn Asp Asn Asp Ser Thr Phe Thr Gly Phe Leu Leu Tyr His Asp  
115 120 125

Thr Asn  
130

<210> 179  
<211> 21  
<212> DNA  
<213> artificial sequence

<220>  
<223> primer

<400> 179  
gctggccaaac cagccatggc c 21

<210> 180  
<211> 23  
<212> DNA  
<213> artificial sequence

<220>  
<223> primer

<400> 180		23
atcaaaaatca ccggaaccag agc		
<210> 181		
<211> 72		
<212> DNA		
<213> artificial sequence		
<220>		
<223> primer		
<220>		
<221> misc_feature		
<222> (47)..(48)		
<223> n is a, c, g, or t		
<220>		
<221> misc_feature		
<222> (50)..(51)		
<223> n is a, c, g, or t		
<400> 181		60
ttccaaataaa gaacttacat cactggtaaa ggtcccttca gcatgmnnmn ntctcgac		
ataatatatgc		72
<210> 182		
<211> 72		
<212> DNA		
<213> artificial sequence		
<220>		
<223> primer		
<220>		
<221> misc_feature		
<222> (46)..(47)		
<223> n is a, c, g, or t		
<220>		
<221> misc_feature		
<222> (49)..(50)		
<223> n is a, c, g, or t		
<400> 182		60
ggccaagctg ccaaggaatt cattgcttgg ctggtgaaag gccgannknn ktggggccaa		
gggaccacgg tc		72
<210> 183		
<211> 50		
<212> DNA		

<213> artificial sequence		
<220>		
<223> primer		
<400> 183		
cagtatgt a gtttttatt t gaaaggcca agctgccaag gaattcattg		50
<210> 184		
<211> 50		
<212> DNA		
<213> artificial sequence		
<220>		
<223> primer		
<400> 184		
caatgaattc ctggcagct tggcattcca aataagaact tacatcactg		50
<210> 185		
<211> 24		
<212> DNA		
<213> artificial sequence		
<220>		
<223> primer		
<400> 185		
tatgccatca gctgggtgcg acag		24
<210> 186		
<211> 48		
<212> DNA		
<213> artificial sequence		
<220>		
<223> primer		
<220>		
<221> misc_feature		
<222> (23)..(24)		
<223> n is a, c, g, or t		
<220>		
<221> misc_feature		
<222> (26)..(27)		
<223> n is a, c, g, or t		
<400> 186		
tcgcacccag ctgatggcat amnnmnngaa ggtgcctcca gaagccct		48
<210> 187		

<211> 23		
<212> DNA		
<213> artificial sequence		
<220>		
<223> primer		
<400> 187		
atcaaaaatca ccggaaccag agc		23
<210> 188		
<211> 65		
<212> DNA		
<213> artificial sequence		
<220>		
<223> primer		
<220>		
<221> misc_feature		
<222> (40)..(41)		
<223> n is a, c, g, or t		
<220>		
<221> misc_feature		
<222> (43)..(44)		
<223> n is a, c, g, or t		
<400> 188		
ctctgggctc caatcctgtc catcctgccc ccgaagcamn nmnnntctcgc acaataatat		60
atggc		65
<210> 189		
<211> 65		
<212> DNA		
<213> artificial sequence		
<220>		
<223> primer		
<220>		
<221> misc_feature		
<222> (39)..(40)		
<223> n is a, c, g, or t		
<220>		
<221> misc_feature		
<222> (42)..(43)		
<223> n is a, c, g, or t		
<400> 189		
ggatggacag gattggagcc cagagcggac tgggctgttn knnktgggc caagggacca		60

cggtc 65

<210> 190  
<211> 65  
<212> DNA  
<213> artificial sequence

<220>  
<223> primer

<220>  
<221> misc\_feature  
<222> (40)..(41)  
<223> n is a, c, g, or t

<220>  
<221> misc\_feature  
<222> (43)..(44)  
<223> n is a, c, g, or t

<400> 190  
ctggaggagc tgatccgtc catttcctc ccaaagcamn nmnnntctcgc acaataatat 60

atggc 65

<210> 191  
<211> 65  
<212> DNA  
<213> artificial sequence

<220>  
<223> primer

<220>  
<221> misc\_feature  
<222> (39)..(40)  
<223> n is a, c, g, or t

<220>  
<221> misc\_feature  
<222> (42)..(43)  
<223> n is a, c, g, or t

<400> 191  
agatggaccg gatcagctcc tccagtggcc tgggctgcnn knnktgggc caagggacca 60

cggtc 65

<210> 192  
<211> 24  
<212> DNA

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<213> artificial sequence

<220>

<223> primer

<400> 192

tatgccatca gctgggtgcg acag

24

<210> 193

<211> 48

<212> DNA

<213> artificial sequence

<220>

<223> primer

<220>

<221> misc\_feature

<222> (23)..(24)

<223> n is a, c, g, or t

<220>

<221> misc\_feature

<222> (26)..(27)

<223> n is a, c, g, or t

<400> 193

tcgcacccag ctgatggcat amnnmnngaa ggtgcctcca gaagccct

48